# Getting to SAP NetWeaver Mobile 7.1

## A Migration Story for Existing SAP Mobile Customers

You may have noticed that we've dedicated the last few Mobile Matters columns to SAP NetWeaver Mobile 7.1, SAP's latest mobile technology release.[1] It's because we truly believe that its groundbreaking functionality enhancements deserve a lot of attention – it's *the* go-to release, and it alleviates the pain points of earlier mobile technologies: device management, performance, and scalability.
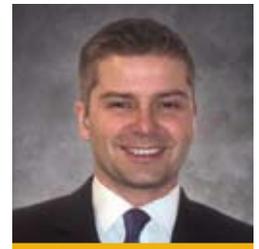
With its new, simplified architectural landscape (see sidebar below), SAP NetWeaver Mobile 7.1 offers these significant improvements:

- It can scale to a large number of mobile devices and high data volumes.

- Its automation options minimize the necessary effort for initial device setup, while new monitoring capabilities simplify user management and support.

- It comes with a completely new set of client-side development tools that embrace modeling and Web Dynpro concepts (see the sidebar on page 62), making application development faster and more effective.

Even beyond these benefits, one of the most coveted new features of SAP NetWeaver Mobile 7.1 is its event-driven technology. It processes transactions *as they occur* – instead of waiting until mobile clients synchronize, like in previous versions. Resulting transactions are deposited in appropriate mobile client outboxes, ready for download when these mobile clients synchronize.[2]

Armed with all of these landmark benefits, organizations that decide to move to SAP NetWeaver Mobile 7.1 logically wonder next: How do we get there? For

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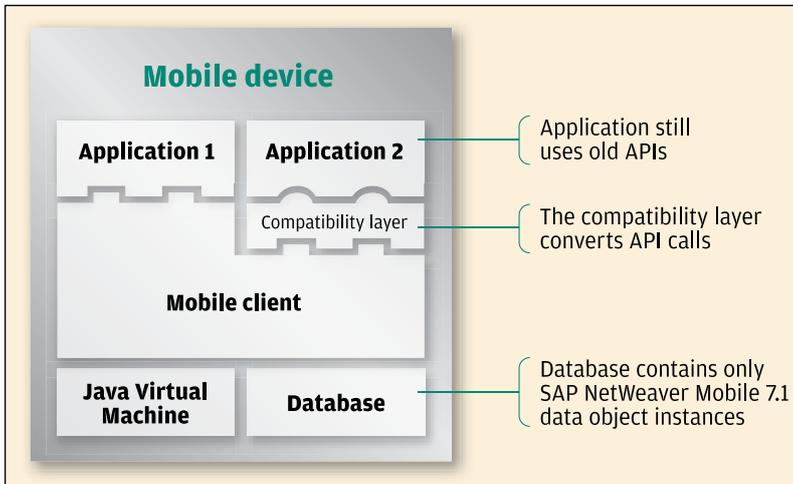
### SAP NetWeaver Mobile 7.1 Brings Big Architectural Changes: What Are They?

The architecture of SAP NetWeaver Mobile 7.1 has changed: In former releases, the updates for a mobile device were calculated during the synchronization cycle. This resulted in longer wait times for the mobile users since they had to wait for the processing to finish. Additionally, updates put a high load on the mobile server, especially at peak synchronization times like the start of a working shift.

With the new event-driven architecture of SAP NetWeaver Mobile 7.1, updates on data records are tracked immediately when they're received by the enterprise system and are instantly propagated into the relevant client outboxes. This results in short synchronization times, as the mobile devices just pick up their updates from the outbox.

What's more, you can now leverage model-driven development tools for creating or enhancing your mobile applications. This makes application development quicker and more efficient.

Further enhancements include high performance data staging by an optimized data store structure, as well as powerful data distribution and realignment algorithms. Binary data – like pictures or documents – can be transferred out of the box with the new SAP NetWeaver Mobile 7.1.

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[1] See the Mobile Matters columns "Overcome the Top 6 IT Challenges of Mobile Business" in the October-December 2007 issue of *SAP Insider* and "Eliminate Mobile Device Management Headaches" in the January-March 2008 issue (www.SAPinsideronline.com).

[2] We recommend that IT teams adapt the data exchange between the back end and the middleware to this paradigm in order to achieve the higher scalability level inherent in the new version. To learn more, please visit http://help.sap.com/nwmobile71.

## Before You Begin...

Before starting your migration, it's important to verify a couple of prerequisites:

- The first is **mobile device support**. Smartphones, PDAs, laptops, and tablet PCs are just some of the devices supported by SAP NetWeaver Mobile 7.1. With the wide range of mobile devices available today, check your device attributes against the product availability matrix on SAP Service Marketplace (**http://service.sap.com/pam**) to confirm that your technologies are supported.

- The second prerequisite is **proper server support**. SAP NetWeaver Mobile 7.1 is only available for 64-bit hardware platforms; if your landscape still uses 32-bit servers, they will not work for the new version.

FIGURE 1 ▲ The compatibility layer within SAP NetWeaver Mobile 7.1's mobile client eases the transition for customers with existing mobile technologies and applications; this compatibility layer also exists within the middleware

companies that have yet to get started with SAP NetWeaver Mobile, the answer's easy: Contact your SAP customer engagement representative and start planning your implementation. For existing SAP Mobile Infrastructure 2.5 and 7.0 customers, read on.

## Great News: SAP NetWeaver Mobile 7.1 Is Backward Compatible

The new platform is backward compatible, protecting customers' existing investments in SAP enterprise mobility. This means that customers running mobile applications built on earlier releases of SAP NetWeaver Mobile (like SAP Mobile Infrastructure 2.5 and 7.0) can continue to run them on SAP NetWeaver Mobile 7.1, despite the architectural changes.[3]

How is this possible? By the inclusion of a compatibility layer, which acts like a translator between your existing system and SAP NetWeaver Mobile 7.1

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[3] In some cases, software adjustments might be necessary. Consult the SAP migration guide on SAP Service Marketplace (http://service.sap.com/migrationnwmobile71) for details.

(see **Figure 1**). This software layer mimics the behavior of former releases of SAP NetWeaver Mobile, hiding the recent architectural changes from these applications. It's located — both on the mobile client and the middleware — within the data orchestration engine (DOE).[4]

## 6 Steps to SAP NetWeaver Mobile 7.1

Due to the architectural changes of SAP NetWeaver Mobile 7.1, a direct upgrade is not feasible. Instead, customers will need to migrate their existing landscape to SAP NetWeaver Mobile 7.1 incrementally through a two-system strategy; mobile users can continue to operate existing mobile applications until their device is upgraded to the new SAP NetWeaver Mobile 7.1 (see **Figure 2** on page 62).

This strategy allows for a progressive rollout of the new version to end users; IT can group rollouts of the new client software in any manner that makes sense to the business, thereby eliminating the need for a "big-bang" deployment, which is generally riskier and more disruptive.

With this migration strategy in place, teams can adhere to the following six steps to migrate their existing landscape to the new technology:

### Step #1: Set Up the New SAP NetWeaver Mobile 7.1 Server

Configuring your new SAP NetWeaver Mobile 7.1 server is straightforward and quick: Simply follow the documentation provided on SAP Service Marketplace at **http://service.sap.com/installnwmobile71**.[5]

### Step #2: Migrate the Application Metadata

This next step lays the groundwork for how your new system will ultimately understand your back-end data. First, export the application metadata from your existing system. This metadata contains:

- *Synchronizer business object (SyncBO) definitions* — A SyncBO may represent, for example, customer data (name, address, telephone number) or a service order (what you must do, where, and when). In former releases, the SyncBO definition

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[4] The data orchestration engine comprises the message-oriented middleware information and data objects, along with their associated data. It includes the tools for defining the dependencies and distribution rules for each object before the objects are used in an application.

[5] Note that only the ABAP stack is required with version 7.1.

## Important New Mobile Tools Available with SAP NetWeaver 7.1

- **SAP NetWeaver Mobile Administrator** – This new tool provides administrators with comprehensive access to all admin-related functions, including deploying applications, monitoring client and back-end synchronization activity, and much more. Administrators can access this tool through the DOE or through a portal.

- **Three new perspectives within the SAP NetWeaver Developer Studio (SAP NWDS)** – SAP NWDS is an integrated environment for the development of J2EE-based, multi-tiered business applications. For mobile development, there are three particularly relevant new perspectives:

  ▸ The *Mobile Development Kit* (MDK) perspective enables developers to import an existing mobile application, connect to the SAP NetWeaver Mobile 7.1 server, and update the metadata from the server. New build functionality also creates an archive that can be directly deployed on the mobile server.

  ▸ The *SAP Mobile Applications for Handhelds* perspective enables developers to build mobile composite applications for handhelds using a model-driven development approach with a graphical toolset.

  ▸ The *SAP Mobile Applications for Laptop* perspective enables developers to build mobile composite applications for laptops – again using a model-driven development approach and graphical tools.

- **Data Orchestration Workbench** – The Data Orchestration Workbench allows you to import your existing application metadata into SAP NetWeaver Mobile 7.1. Additionally, you can change or create distribution rules, which define the information flow in your landscape.

held the business object model for the synchronization and defined the runtime behavior of the middleware during synchronization.

- *Data dependencies* – Data dependencies would tag this data together, allowing the service order instance to "follow" the customers.

- *Data filtering rules* – Data filtering rules act as templates or guidelines for how the data is grouped and passed on.

After you export the metadata into a text file, this file is imported into the new system. The metadata is then used to generate the required data structures for synchronization, called data objects in the new system (comparable to the SyncBOs in older versions of SAP NetWeaver Mobile).

Additionally, during the import of this metadata, the new system automatically generates distribution rules using filtering rules that were defined in your old system. Distribution rules define which mobile devices receive which data instances.

Note, though, that the automatic generation of distribution rules is possible only if the filtering rules were based on one field. If they were based on multiple fields, then the new distribution rules will need to be created manually in the new system.
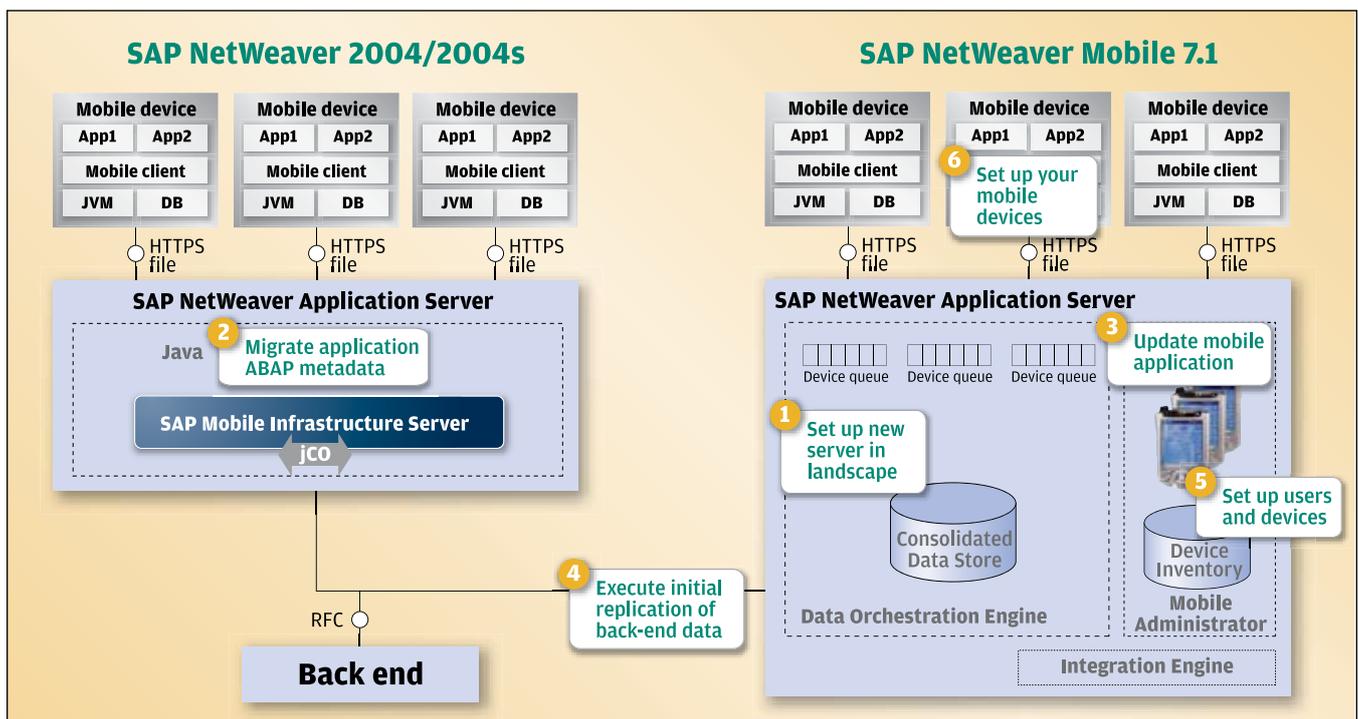
**FIGURE 2** ▲ A migration roadmap: The six steps of moving to SAP NetWeaver Mobile 7.1

### Step #3: Update Your Mobile Application's Metadata

The client side of a mobile application depends on the data object model defined on the server, as this model specifies how to interpret the data. Because the data object model changed with SAP NetWeaver Mobile 7.1, the application must receive this updated information in order to understand the data that is sent from the DOE. This information is stored as part of the mobile application in an XML structure.

SAP NetWeaver Developer Studio (SAP NWDS), the SAP development environment for Java applications, contains a new version of the Mobile Development Kit (MDK) that directly connects to the SAP NetWeaver Mobile 7.1 server and pulls the required information. All you need to do is import the application archive into SAP NWDS, connect to your mobile server, and download the data definitions. After exporting the updated application from SAP NWDS, deploy it to your SAP NetWeaver Mobile 7.1 server using ABAP transaction SDOE_UPLOAD_ARCHIVE.

The client side of your mobile application is now ready to be deployed to users' mobile devices.

### Step #4: Download the Back-End Data

Next, replicate relevant back-end data into the Consolidated Data Store (CDS), which resides in the SAP NetWeaver Mobile 7.1 server. CDS contains the cache copy of relevant data from the source back-end application. The DOE uses CDS to both determine and compose the appropriate, queued data for mobile clients. What's more, using the CDS removes excessive load from your back end, as the data needs to be pulled from here only once.

The initial replication can be triggered per data object using the corresponding ABAP transaction SDOE_LOAD. It is advisable to run this process during your back end's idle time – over the weekend, for example – to minimize performance impact for your online users. These considerations depend on the replicated data volume, as well as the available system resources in your back-end system.

### Step #5: Set Up Users and Device Definitions

You can copy user information from the old system by using Central User Administration (CUA) in SAP NetWeaver. In CUA, simply specify your existing mobile server as the source system for the user information and your new SAP NetWeaver Mobile 7.1 server as the target system. CUA then automatically replicates the user information from the source system into the target system.

You can also migrate device definitions from your existing system. With SAP NetWeaver Mobile Administrator, you can download these definitions into the new SAP NetWeaver Mobile 7.1 server.

An alternative is to create them automatically and directly in the mobile server, which avoids the migration of any obsolete device definitions. To do this, you'd use the receiver generation (RecGen) data object, which is a special kind of data object: The data replicated from the back end is not distributed to any of the mobile devices, but is used to create device definitions inside the SAP NetWeaver Mobile 7.1 server. For example, you can create device definitions for each of your laptop devices by loading their relevant equipment information into your DOE.

### Step #6: Set Up Your Mobile Devices

The preferred option for installing the SAP NetWeaver Mobile 7.1 client software on mobile devices is via customized software packages. You can define the software components – like mobile applications or databases – to be included in these packages in SAP NetWeaver Mobile Administrator. After generating the package, you can then download a single archive containing all the required software components, as well as a one-click installer.

Additionally, these packages can include an initial set of business data for end users – customer or order information, for example. Your mobile users

## Important Functionality Deltas in SAP NetWeaver Mobile 7.1

Due to the architectural changes in SAP NetWeaver Mobile 7.1, a few functions have changed or are no longer available. These changes provide important benefits for users.

For example, before, you could selectively suppress certain transactions that occurred on the mobile client from being uploaded to the server. In release 7.1, this selective suppression has been eliminated. All transactions on the client are immediately placed in the client outbox; this abolishes both client effort and the time it normally takes to calculate these transactions.

Another modification is that the record identification system has been changed; instead of using 10-character numerical identifiers (so-called SyncKeys), it now uses 32-characters GUIDs.

These changes might result in some minor adjustments to your mobile applications. You can get a list of all of these changes by consulting the migration guide in the SAP Service Marketplace (**http://service.sap.com/migrationnwmobile71**).

are not stuck impatiently tapping their feet. With access to a complete data set, they can immediately begin executing their business tasks after the installation, since all required information is already present on the device.

Lastly, there are a couple of methods for distributing the software packages. You can choose to distribute them manually, either using DVDs or a shared drive, or − because SAP NetWeaver Mobile 7.1 integrates with Microsoft Systems Management Server (SMS) − you can completely automate distribution if you have this tool. Your choice.

## Summary

SAP NetWeaver Mobile 7.1 represents a new generation of mobile middleware from SAP. It has undergone significant architectural changes to provide critical new capabilities sought by organizations looking to extend their data and processes to mobile workers.

Migration may seem like an uphill battle at first. But by using our recommended approach, your organization can smoothly migrate to this new version and gain vital benefits such as improved scalability, simpler development, and easier device management.

For more information about SAP NetWeaver Mobile 7.1, please visit **https://www.sdn.sap.com/irj/sdn/nw-mobile**. ◻

## AdditionalResources...

### ...from SAPinsider

- "Eliminate Mobile Device Management Headaches: SAP NetWeaver Mobile 7.1 Is IT's Antidote" by Arvind S. Pawar (*SAP Insider*, January-March 2008, **www.SAPinsideronline.com**)

- "Overcome the Top 6 IT Challenges of Mobile Business: New Major Release of SAP NetWeaver Mobile Paves the Way" by Hansen Lieu and Arvind S. Pawar (*SAP Insider*, October-December 2007, **www.SAPinsideronline.com**)

- "Best practices for planning, deploying, and maintaining mobile applications with SAP NetWeaver Mobile 7.0" by Alexander Ilg and Karsten Strothmann (*SAP Professional Journal*, September/October 2007, **www.SAPpro.com**)